

6 a video driver in said host computer for providing a portion of a display on
7 said first monitor to said second monitor.

1 18. (Amended) An apparatus comprising:
2 a second display screen for connection to a host computer having a first
3 display screen, said second display screen being separate and unattached to said first
4 display screen and smaller than said first display screen, said second display screen
5 comprising:
6 a display controller coupled to said second display screen;
7 a video memory coupled to said display controller; and
8 a bus interface, coupled to said video memory, for providing an interface
9 with a shared peripheral bus.

REMARKS

Claims 1-18 are pending in the present application. Claims 1 and 18 have been amended. The claims as pending are set forth in the Appendix for the Examiner's convenience. Reconsideration is respectfully requested.

I. BRIEF OVERVIEW OF THE CLAIMED INVENTION

The present invention provides a system with a main monitor for a host computer and a second, mini monitor that is separate from the first monitor for displaying a portion of the display normally intended for the main monitor. In one embodiment, the mini monitor is connected to the computer over a shared, peripheral bus, such as the universal serial bus (USB). The smaller size of the mini monitor and either compression or slower refresh rates allow it to be connected to the USB just like other peripheral devices.

By displaying on the second, mini monitor windows which do not update often, the amount of bandwidth required is further reduced. For example, the smaller monitor could be used for a stock chart or tickertape, e-mail alert, a calendar, appointment book, alarm clock, etc.

In one embodiment, the existing dual monitor feature of Windows 98 is used. A custom video driver makes the device appear to be an ordinary video card and computer monitor to the operating system and to application software. The mini monitor itself will include the USB interface and a video memory for storing the current screen locally, so that refreshing need not be done over the USB. A simple display controller for driving the display from the video memory is provided. The more complex video controller operations, such as updating the memory, doing rendering, etc. is done in the host computer microprocessor or video graphics processor.

In another embodiment, the mini-monitor has touch screen capability, allowing it to also function as a control pad where icons from toolbars, etc. are off the main screen. Other interaction buttons, such as "Select", "Next", and "Back" are included. These buttons can be used for content provided to the mini-monitor over the internet, such as pictures from a museum, stock reports, etc.

II. REJECTIONS UNDER 35 U.S.C. § 103

A. The Examiner has rejected claims 1-6, 8-14 and 18 under 35 USC § 103(a) as allegedly being unpatentable over Kou (U.S. Patent No. 5,874,928) in view of Grossman et al. (U.S. Patent No. 5,682,486).

As to independent claim 1, the Examiner relies on Fig. 1 of Kou and states that Kou discloses a host computer, a first monitor connected to said host computer, a second monitor, a video driver in said host computer and that Grossman et al. in Fig. 1 disclose a second monitor that is smaller than that of the first monitor, and that it would have been obvious to incorporate the smaller monitor of Grossman et al. into that of Kou as both systems disclose a monitor system comprising of a plurality of monitors connected to the same host computer.

Applicants respectfully disagree with the Examiner assertions regarding the teachings of Kou and Grossman et al., as well as the combinations of Kou with Grossman in view of the claimed invention.

The Kou patent is directed to providing a method and apparatus for driving a plurality of displays simultaneously wherein each display is refreshed at an optimal rate (see col. 3, lines 39-41). The motivations behind the Kou patent are to provide a display controller (*e.g.*, a video card) which provides for optimally driving both a CRT and an LCD simultaneously, as in when a portable or laptop computer is also connected with a full-size or desktop monitor (for example, see col. 3, lines 15-20, and col. 6, lines 25-30). Kou is concerned about using a display controller to drive two different displays that require different refresh rates for an optimal performance.

The plurality of displays in Kou all display the same information. In stark contrast, the second monitor of the present invention displays only a portion of the display from the first monitor and not an exact and identical display (as displayed on the first monitor) on the second and smaller monitor. This limitation is clearly recited in independent claim 1, namely, ...a video driver in said host computer for providing a portion of a display on said first monitor to said second monitor.

Turning now to the Grossman et al. reference, the Examiner states that Grossman teaches that a second monitor may be smaller than that of the first. While the Applicants may agree with this general assessment of the Grossman reference, Applicants disagree with the remainder of the Examiner's findings. The Grossman et al. patent provides a system that permits users to manipulate multiple graphical images like windows, icons, or TV channel selections on systems that have two or more monitors controlled by a single computer. Specifically, the Grossman et al. patent teaches an inter-monitor movement using a "transport" region into which icons, etc. are moved on a source monitor, and once in this region the icons get transported from the source monitor to a target or destination monitor. The motivation of Grossman et al. is to enable inter-monitor transport of icons. Incidental to this inter-monitor transport, Grossman et al. teach an auxiliary monitor that is attached to the source and/or target monitor. Applicants are at a loss as to what purpose the auxiliary monitor serves other than being "small enough to fit on a bezel of a monitor but large enough to show at least one icon," (see col.

2, lines 65-67, of Grossman et al.) Regardless of what the auxiliary monitor of Grossman et al. is supposed to do, and/or how big it is, the auxiliary monitor of Grossman et al. is physically attached or mounted to one or more of the source or target monitors (see col. 3, lines 1-5). In sharp contrast the second monitor of the present invention is not attached to the first monitor of the present invention.

Applicants respectfully submit that for reasons set forth above as to the driving forces behind the Kou and Grossman et al. patents, there is not motivation to combine these two references. As stated above, the motivations behind the Kou patent are to provide a display controller (e.g., a video card) which provides for optimally driving both a CRT and an LCD simultaneously, as in when a portable or laptop computer is also connected with a full-size or desktop monitor (for example, see col. 3, line 15-26, and col. 6, lines 25-30). On the other hand, the motivation of Grossman et al. is to enable inter-monitor transport of icons.

Assuming *arguendo* that a motivation did exist, which does not, to combine the teachings of Kou with Grossman et al. as is suggested by the Examiner, the resulting combination would have very little to do with the present invention. A hypothetical combination of Kou and Grossman et al. would provide for a video controller that would simultaneously drive a plurality of monitors, including a CRT and LCD to display an identical image, while enabling an inter-monitor transport of icons between the monitors, where one of the plurality of monitors displaying the identical image as the others would be smaller and attached to the other monitors. Applicants respectfully submit that the displaying an identical image on the attached and smaller display as that of source monitor is not an optimal display, and thus contrary to the teachings of Kou. So, not only is there no motivation to combine Kou and Grossman et al., as suggested by the Examiner, but a hypothetical combination would contradict the motivation or objectives of the primary reference. The hypothetical combination would contradict the motivation or objectives of the primary reference, because Kou teaches the

driving of multiple displays to result in an optimal display for all displays, and an identical image displayed on a much smaller monitor cannot be optimally displayed.

Applicants have amended independent claim 1 to make this claim more specific so as to clearly distinguish it from the hypothetically combined teachings of Kou and Grossman et al. references. Furthermore, Applicants respectfully emphasize that the second monitor of the present invention only displays a **portion** of the display from the first monitor. In particular, amended claim 1 reads as follows:

*1. / A monitor system comprising:
a host computer;
a first monitor connected to said host computer;
a second monitor, separate and unattached to said first monitor and
smaller than said first monitor; and
a video driver in said host computer for providing a portion of a display
on said first monitor to said second monitor.*

Accordingly, Applicants respectfully submit that for reasons set forth above, amended independent claim 1 is not obvious over Kou in view of Grossman et al. Further, considering that dependent claims 2-14 include all the limitations of independent claim 1, from which they depend, these claims are patentable to the same extent that independent claim 1 is patentable.

Independent Claim 18

As to independent claim 18, the Examiner also relies on a combination of Kou and Grossman et al. to assert that independent claim 18 is obvious over Kou in view of Grossman et al. The Examiner has primarily relied on teachings of Fig. 1 of Kou to assert that independent claim 18 is unpatentable.

Applicants respectfully disagree with the Examiner's assessment of Kou and Grossman et al. for reasons set forth above in addition to those set forth below. Fig. 1 of Kou shows a block diagram representation of a system wherein the

patented display controller (e.g., a video card) is coupled to the host computer, a display memory and frame buffer and a plurality of displays. It is clear from Kou that its display controller, video memory and bus interface are not included in the second and smaller monitor, but that they are parts of the host computer to which the plurality of displays are connected. The plurality of monitors in the Kou as well as Grossman et al. references are similar to the common computer monitors that are generally available for use with any host computer having multiple monitors, and examples of which have been set forth by the Applicants in the background section of the present patent application

In sharp contrast, as is embodied in the present invention, the mini monitor of the present invention itself includes the bus interface, video memory, display controller and display driver, as is recited in independent claim 18. This embodiment is clearly described in the present invention on page 2, lines 15-20 and on page 3, lines 24-29. In particular, the mini monitor or second monitor of the present invention includes these elements, set forth above, including the bus interface and a video memory, and associated display driver and controller to store a current screen display locally, so that refreshing need not be done across the external bus.

These elements of the second monitor are specifically recited in dependent claim 9 as well as in independent claim 18. Additionally, Applicants have amended independent claim 18 to better articulate these limitations in view of Kou and Grossman et al. Accordingly, Applicants respectfully submit that for reasons set forth above, independent claim 18 as amended is not obvious over Kou in view of Grossman et al.

B. The Examiner has rejected claims 7 and 15-17 under 35 U.S.C. 103(a) as allegedly being unpatentable over Kou in view of Grossman et al as applied to claim 1, and further in view of Craig (U.S. Patent No. 5,790,176).

Applicants respectfully disagree with the Examiner assertions regarding the teachings of Kou, Grossman et al., as well as the combinations of Kou with Grossman and Craig in view of claim 15.

Applicants respectfully submit that considering the driving forces behind the Kou and Grossman et al. patents, there is not motivation to combine these two references. As stated above, the motivations behind the Kou patent are to provide a display controller (e.g., a video card) which provides for optimally driving both a CRT and an LCD simultaneously, as in when a portable or laptop computer is also connected with a full-size or desktop monitor (for example, see col. 3, lines 15-26, and col. 6, lines 25-30). On the other hand, the motivation of Grossman et al. is to enable inter-monitor transport of icons. Additionally, there is no motivation to combine the teachings of Kou and Grossman et al with that of Craig. The Craig patent is entirely non-analogous to the teachings of either Kou, Grossman et al. or Kou and Grossman et al. The Craig patent relates to a data storage distribution system using the Public Switched Telephone Network (PSTN) and to a media server for supplying stored data to local subscribers over a PSTN. While Applicants agree that Craig may teach an MPEG encoder, Applicants respectfully submit that there is nothing in the teachings of Kou, Grossman et al., Craig, or any combinations of these three references that would motivate one of ordinary skill in the art to combine these references.

Assuming that a motivation did exist, which does not, to combine the teachings of Kou, Grossman et al. and Craig, the hypothetical combination would not render independent claim 15 unpatentable. As set forth above regarding claim 18, and here in relation to claim 15, such a combination still does not teach all the limitations of independent claim 15, including:

(i) a second monitor, smaller than said first monitor, connected to said shared peripheral bus, said second monitor including

a display screen on said second monitor of less than 8.5 inches

diagonally;

a display controller connected to said display screen.

a video memory connected to said display controller.

a bus interface connected to said video memory, and

Furthermore, such a combination does not teach:

- (ii) a power input connected to said bus so that the power for said second monitor is derived from said shared peripheral bus;

In particular, Examiner alleges that item (ii) above is taught in col. 6, lines 19-30 of Kou. Applicants respectfully disagree. Col. 6, lines 19-30, of Kou is completely silent as to how a second monitor is powered.

Accordingly, Applicants respectfully submit that for reasons set forth above, independent claim 15 is not obvious over Kou in view of Grossman et al and further in view of Craig. Further, considering that dependent claims 16-17 include all the limitations of independent claim 15, from which they depend, these claims are patentable to the same extent that independent claim 15 is patentable.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "Version with Markings to Show Changes Made."

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

Hugh J. McLarty et al.
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PATENT

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 925-472-5000.

Respectfully submitted,



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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the claims:

Claims 1 and 18 have been amended as follows:

1. (Amended) A monitor system comprising:
a host computer;
a first monitor connected to said host computer;
a second monitor, separate and unattached to said first monitor and smaller
than said first monitor; and
a video driver in said host computer for providing a portion of a display on
said first monitor to said second monitor.

18. (Amended) An apparatus comprising:
a second display screen for connection to a host computer having a first
display screen, said second display screen being separate and unattached to said first
display screen and smaller than said first display screen, said second display screen
comprising:

a display controller coupled to said second display screen;
a video memory coupled to said display controller; and
a bus interface, coupled to said video memory, for providing an interface
with a shared peripheral bus.

APPENDIX - PENDING CLAIMS

1. A monitor system comprising:
a host computer;
a first monitor connected to said host computer;
a second monitor, separate and unattached to said first monitor and smaller than said first monitor; and
a video driver in said host computer for providing a portion of a display on said first monitor to said second monitor.
2. The system of claim 1 further comprising a shared peripheral bus connected between said host computer and said second monitor.
3. The system of claim 2 wherein said second monitor is powered by said shared peripheral bus.
4. The system of claim 2 wherein said shared peripheral bus is a universal serial bus.
5. The system of claim 1 wherein said portion of a display comprises a separate window from said first monitor.
6. The system of claim 1 wherein said portion of a display is provided only to said second monitor.
7. The system of claim 1 further comprising a compression unit for compressing said portion of said display for transmission to said second monitor.
8. The system of claim 1 further comprising a software operating system controlling said first computer, said operating system controlling the transmission of video data to said second monitor.

9. The system of claim 1 wherein said second monitor includes:
a display screen;
a display controller coupled to said display screen;
a video memory coupled to said display controller; and
a bus interface coupled to said video memory.
10. The system of claim 1 wherein a display screen on said second monitor is less than 8.5 inches diagonally.
11. The system of claim 1 wherein said second monitor includes a touch screen.
12. The system of claim 1 wherein said second monitor includes icons for control of a display on said first monitor.
13. The system of claim 1 wherein said second monitor includes a transmission capability for providing data to said computer on the activation of buttons or icons on said second monitor.
14. The system of claim 13 wherein said transmission capability is wireless.
15. A monitor system comprising:
a host computer;
a shared peripheral bus connected to said host computer;
a first monitor connected to said host computer;
a second monitor, smaller than said first monitor, connected to said shared peripheral bus, said second monitor including
a display screen on said second monitor of less than 8.5 inches diagonally;
a display controller connected to said display screen,
a video memory connected to said display controller,

a bus interface connected to said video memory, and
a power input connected to said bus so that the power for said second monitor is derived from said shared peripheral bus;
a compression unit in said host computer for compressing said portion of said display for transmission to said second monitor;
a video driver in said host computer for providing a separate window of a display to said second monitor and not to said first monitor.

16. The system of claim 15 wherein said shared peripheral bus is a universal serial bus.

17. The system of claim 15 further comprising a software operating system controlling said first computer, said operating system controlling the transmission of video data to said second monitor.

18. An apparatus comprising:
a second display screen for connection to a host computer having a first display screen, said second display screen being separate and unattached to said first display screen and smaller than said first display screen, said second display screen comprising:
a display controller coupled to said second display screen;
a video memory coupled to said display controller; and
a bus interface, coupled to said video memory, for providing an interface with a shared peripheral bus.